Department of the Army
U.S. Army Medical Research and Materiel Command
U.S. Army Medical Materiel Agency

FIELD
COMPUTED TOMOGRAPHY (CT) SCANNER
6525-01-425-0176, LIN C79284

INTEGRATED MANAGEMENT AND SUSTAINMENT PLAN

27 December 2001

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Executive Summary

This integrated management plan brings together in one document the expertise of USAMMA in the management and sustainment of a high technology, low density, and low usage medical device.

The plan delineates the responsibilities and procedures that will be followed by U.S. Army Medical Command (USAMEDCOM) activities signing loan agreements with the U.S. Army Medical Materiel Agency (USAMMA). The plan further delineates the responsibilities and procedures to be followed by the various USAMMA Directorates in providing a flexible and cost effective management strategy of the “Battlefield computed tomography system” (CT Scanner) over its entire life cycle.

The Army Medical Department (AMEDD) currently has field CT’s on loan to various fixed Medical Treatment Facilities (MTF) to support training and augment patient care. Each is covered by a separate maintenance contract.

From the time of acquisition and including post warranty periods, the USAMMA, Materiel Acquisition Directorate (MAD) has funded for annual maintenance contracts. With exception to deployed equipment, the USAMMA funded maintenance contracts will not be available in the future for the CT Scanners loaned to USAMEDCOM MTF's.

During the Summer of 2001, Philips Medical Systems (PMS) purchased the assets of Marconi Medical Systems. The name change of the company does not affect the day-to day use of the CT or support systems that are in-place. In addition, the MAD has funded for CT scanner system upgrades to include a higher heat capacity X-ray tube (Rhino tube), a higher power X-ray generator, 400 mA as opposed to the original 125 mA, and extended length scan times 100 cm as compared to 40 cm. The latest version software was also added. All prior CT training included these features, so no additional training is necessary for biomedical support personnel.

Since the initial loan of the field CT Scanners, the using organization has been responsible to provide manpower for operations, as well as for day-to-day operations.

Introduction

Prior to this management plan, there was no detailed process addressing the immediate and long-term management and sustainment of the CT Scanner. To correct this shortfall, the Maintenance Engineering and Operations Directorate (MEOD) has developed procedures for the borrowing activity and the USAMMA.

These procedures were designed with flexibility in mind. They should be reviewed at least annually for applicability to world events, changes in technology, resource constraints, or as mission requirements change.

Chapter 1 contains the responsibilities of the borrowing unit and the procedures to be followed in maintaining and readiness reporting of the CT Scanner.

Chapter 2 contains the recovery procedures which describe the tasks necessary to relocate a CT Scanner from MTF to the USAMMA Medical Equipment Maintenance Division (MEMD), Tracy, CA. Also included are instructions for preparing the CT for Operational Storage.

Chapter 3 contains procedures necessary to maintain the CT Scanner and Associated Support Items Of Equipment (ASIOE). In addition, it outlines the procedures required to prepare and maintain the CT Scanner in operational storage at MEMD, Tracy.

Chapter 4 contains the procedures necessary for preparing and shipping a field CT in support of deployments.

Appendixes to this document provide additional information.

Changes and Amendments

20 April, 2000 The cover date of 20 April 2000 was added to reflect a change in reporting frequency of the Equipment Status Report (ESR) from Monthly to Quarterly basis.
Part numbers for CT specific components were added to ASIOE list.
27 July 2000 An index was added. Part numbers for CT support CD-ROM and Laser Imager component was added. Minor typographical errors were corrected. Acronyms were added.
9 March 2001 Cover date changed to 9 March 2001. Chapter 4-2. Subchapter a. (1), reporting interval amended to 72 hours.
16 April 2001 Corrected ZLIN 17788 to LIN to C79284. Corrected MMS LIN to M09826.
27 December 2001 Cover date changed to 27 December 2001. Chapter 1-4 b. Added schedule for ESR submission. Chapter 3-2 b. (5) added statement on dehumidifier. Noted in Summary that generator and X-ray tube upgrades had been added to the CT scanners. Added new page and pin-out data on 60 and 100 Ampere electrical service connectors.

Chapter 1: Pre-Deployment Unit Maintenance

1-1 GENERAL. The Unit signing the loan agreement and hand receipt for a field CT Scanner and ASOIE will be known as the borrower. The lender is USAMMA.

1-2. RESPONSIBILITIES.

a. The borrower will ensure the CT Scanner, all ASOIE, and the ISO Shelter are maintained in a Fully Mission Capable (FMC) condition, ready to deploy with minimal notification.

b. The borrower is accountable for the CT Medical Materiel Set (MMS) D-432 and all medical and non-medical ASIOE delivered with the system.

c. The borrower will maintain the CT Scanner and ASOIE to manufacturer specifications and standards. Maintenance records will be maintained and transfer with the equipment when deployed.

d. The borrower is responsible for the funding of all consumable supplies and any maintenance contracts required for the operation of the CT Scanner.

e. The USAMMA Strategic Capabilities and Materiel Directorate (SCMD) will provide as much prior notice of upcoming deployment as is possible.

1-3. PROCEDURES.

a. Maintenance of the CT Scanner may be provided by in-house maintainers or with a Defense Supply Center, Philadelphia (DSCP) CT Scanner maintenance contract.

b. The USAMMA National Maintenance Point (NMP) will coordinate manufacturer's maintainer training if requested by the borrower.

c. Unit generated Standing Operating Procedure (SOP) will include:

(1) Offices and telephone numbers for key points of contact for the borrowing unit and the USAMMA.

(2) Maintenance procedures.

(3) Procedures for accepting temporary ownership from USAMMA.

(4) Procedures when notified by the USAMMA that the CT Scanner has been identified for deployment, and for removal of the CT Scanner prior to deployment.

1-4. ***EQUIPMENT STATUS REPORT*** (ESR).

a. An ESR will be initiated quarterly and forwarded to COMMANDER, U.S. ARMY MEDICAL MATERIEL AGENCY, ATTN: MCMR-MMM-P, 1423 Sultan Drive, Suite 100, Fort Detrick, MD 21702-5001. Appendix I is a template of the ESR.

b. Recommended calendar schedule and deadline for submission of the ESR is:

Jan - Mar	1st week of April
Apr - June	1st week of July
Jul – Sep	1st week of Oct
Oct – Dec	1st week of Jan

c. The ESR will be combined with other information to provide the Commander, USAMMA, periodic updates on field CT readiness.

Chapter 2: Recovery

2-1. GENERAL.

a. This chapter explains the recovery procedures (RP) for the CT Scanner system from a MTF. The system includes the CT w/ ISO Shelter, medical and non-medical ASIOE. It also outlines the measures essential for a subsequent relocation, either to the USAMMA Medical Equipment Maintenance Division (MEMD), Tracy, CA for preparation for operational storage or in support of a deployment operation.

b. The RP implements the policy contained in the USAMMA Commanders Disposition and Maintenance Policy Memorandum, dated 9 December 1998, regarding the CT Scanner.

2-2. RESPONSIBILITIES.

a. Borrower

(1) Perform inventories of hand receipted equipment prior to the USAMMA RP arrival.

(2) Assist the RP during removal of the CT Scanner System.

b. USAMMA Maintenance Engineering and Operations Directorate (MEOD):

(1) Determine the need for Department of Public Works (DPW) support.

(2) Assist the USAMMA Force Development and Sustainment Directorate (FDSD) personnel to conduct a 100% inventory of on-hand equipment. (Refer to Appendix A through D)

(3) Inspect exterior and interior of the ISO shelter for damage, which may pose problems with shipment.

(4) Perform a complete operational check of the CT Scanner system and ASIOE.

(5) Coordinate with the DPW to disconnect utilities.

(6) Direct and participate in packing the CT Scanner equipment and related ASIOE.

(7) Prepare the CT Scanner for transport.

c. USAMMA Force Development and Sustainment Directorate (FDSD):

(1) Coordinate CT Scanner transportation as required.

(2) Fund the CT Scanner movement.

(3) Perform 100% inventory of hand-receipted items and account for inventory discrepancies.

(4) Verify that Container Safety Certification (CSC), DD Form 2282, and documentation for transport are up to date.

(5) Verify all required identification and external markings on the ISO shelter and MILVAN are IAW MIL-HDBK 138A (Container Inspection Handbook for Commercial and Military Intermodal Containers).

2-3. PROCEDURES.

a. Initial Notification

(1) Upon notification that a CT Scanner is no longer required at a facility or is required for a deployment, the USAMMA MEOD and FDSD will identify a recovery team (RT). The RT will coordinate actions necessary to expeditiously prepare and remove the CT Scanner and all ASIOE.

(2) The RT will contact the MTF and identify a local Point Of Contact (POC) for removal of the CT Scanner. In addition, all efforts will be made during this initial contact to determine what resources are required to remove the CT Scanner and ASIOE. At a minimum, the following will be discussed to determine if a pre-site visit is warranted and to establish a recovery date:

(a) DPW support to disconnect utilities from the ISO shelter.
(b) Removal of obstacles surrounding or limiting direct crane access to the CT Scanner ISO shelter in order to remove it from the facility.
(c) POC for DPW.
(d) POC for the Installation Transportation Officer (ITO).
(e) Materiel Handling Equipment (MHE) requirements/availability.
(f) Packaging materials for the ASIOE.
(g) ISO Shelter certification.

b. At the Removal Site.

(1) MTF Logistic personnel will:
(a) Not disconnect any of the utilities being supplied to the CT Scanner unless specific directions from the USAMMA MEOD have been given prior to the RT arrival.
(b) Assist the RT during equipment inventories.
(c) Assist the RT in coordinating with the POC at DPW and ITO.

(2) MEOD RT personnel will:

(a) Perform an operational checkout of the CT Scanner and the medical and non-medical ASIOE.
(b) Ensure the CT Scanner patient couch is lowered and the gantry set at the proper angle before electrical power is disconnected.
(c) Ensure that the medical ASIOE is properly secured in the shelter or is secured in the MILVAN.

(3) FDSD RT personnel will:

(a) Ensure that all materiel handling equipment is on-hand.
(b) Ensure that all documentation required for turnover of equipment is available.
(c) Coordinate for the removal of the CT Scanner.
(d) Ensure Container Safety Certification, for transportation of containers is up to date.
(e) Ensure all required identification and external markings on the ISO shelter and MILVAN are IAW MIL-HDBK 138A (Container Inspection Handbook for Commercial and Military Intermodal Containers).
(f) Develop a list of shortages, accounting for inventory discrepancies.
(g) Complete property transfers and documentation relieving the borrower of further responsibility.

Chapter 3: Operational Storage

3-1. GENERAL. Operational Storage at a USAMMA facility ensures that the CT Scanner and ASIOE are maintained in the latest software configuration and in a high state of readiness. Normally, only MEMD – Tracy, CA and U.S. Army Medical Materiel Center, Europe (USAMMCE), Pirmasens, GE will be designated as Operational Storage Locations (OSL).

3-2 PROCEDURES.

a. Facilities designated for Operational Storage will develop a written CT Maintenance & Operational Storage Standing Operating Procedure (SOP). The SOP will address equipment set-up, inspection, performance verification, and repackaging of the equipment. A template for an SOP is provided at Appendix G and H.

b. Upon receipt of a CT Scanner the OSL will:

(1) Inspect for any external or internal damage to the ISO shelter IAW MIL HDBK 138A (Container Inspection Handbook for Commercial and Military Intermodal Containers). As required, perform repair actions or obtain repairs to restore container to serviceable condition.
(2) Perform an inventory of equipment and report shortages to the MEOD.
(3) Install system software and/or required hardware upgrades to the equipment.
(4) Perform operational checks on the CT Scanner, medical ASIOE and non-medical ASIOE. Perform repairs as needed.
(5) During periods of extended storage the dehumidifier will be used to maintain appropriate low levels of humidity within the ISO-shelter.
(6) As necessary, replacement of ASIOE items through FDSD.

c. FDSD provides:

(1) Repair support (materiel and funding) for all CT Scanner non-medical ASIOE.
(2) Replacement of non-medical ASIOE that is determined by the OSL to be non-repairable.
(3) Materiel as necessary to reconstitute the MMS D-432 to operational capability.

d. The OSL will maintain records on the CT Scanner including all transactions taken on behalf of the system.

3-3. OPERATIONAL STORAGE PLAN.

a. Upon completion of the restoration and reconstitution of the CT Scanner and ASIOE, the OSL will:

(1) Place the CT Scanner and ASIOE into operational storage and provide maintenance services in accordance with manufacturer specifications.
(2) Maintain the MMS D-432 for the system in an up to date and deployable condition.

(3) Provide adequate climate control (temperature in range of 65 ^{o} to 80^{o} F and RH less than 90%, non-condensing) for the CT Scanner.
(4) Install and verify performance of manufacturer's upgrades and modifications to the CT Scanner or ancillary equipment on an as required basis.

b. The USAMMA Materiel Acquisition Directorate is responsible to program for funding and fund for the operational storage of the CT Scanner and ASIOE as well as the replacement of MMS components as they expire or otherwise need replacement.

3-4. Equipment Status Report (ESR).

a. The OSL will prepare a quarterly ESR and submit to COMMANDER, U.S. ARMY MEDICAL MATERIEL AGENCY, ATTN: MCMR-MMM-P, 1423 Sultan Drive, Suite 100, Fort Detrick, MD 21702-5001. Appendix I is a template for the ESR.
b. The National Maintenance Point will monitor the quarterly ESR and provide periodic status updates to the Commander, USAMMA.

Chapter 4: Deployment Action

4-1. GENERAL.

a. The USAMMA will typically receive telephonic or written communication considered an advance notification that a medical mission may require the specialized capabilities of a CT Scanner.

b. Information is provided to specific elements within the USAMMA chain of command regarding the support of the equipment at the deployed location. The CT Scanner will typically be co-located with a deployed medical unit, usually a Combat Support Hospital (CSH) with an assigned Head and Neck Team (Neurosurgery).

4-2. PROCEDURES. A number of actions are necessary in order to prepare the equipment for movement; order start-up supplies, replenish consumables, make transportation arrangements, and initiate a service contract if necessary.

a. Upon official notification for deployment of the CT Scanner and ASIOE, the USAMMA Strategic Capabilities and Materiel Directorate (SCMD) will:

(1) Notify MEOD the requirement to deploy a CT who will notify the OSL of the requirement. The OSL will be prepared to make the equipment ready for transportation within 72 hours from official notification. Excluded are potency and dated or shelf-life items.
(2) Jointly determine with the MEOD, timeframes for deployment.
(3) Direct the Materiel Acquisition Directorate to implement a maintenance service contract with the Defense Support Center, Philadelphia, (DSCP) when required by the MEOD.

b. When notified by MEOD the OSL will:

(1) Perform a verification inventory on the consumables and start-up supplies that should either be shipped with the scanner or arrive at the destination concurrent with the scanner.
(2) Prepare the CT Scanner for transport, secure the required medical and non-medical ASIOE within the ISO-shelter, and secure remaining materiel in the MILVAN.
(3) Prepare and submit requisitions for desiccant and equipment protective wrapping to be used when transportation to destination exceeds 14 days. The OSL should identify a local source of supply for these materials prior to the notice to deploy.
(4) Prepare and submit requisitions for shelf-life items as well as provide delivery address for drop shipment of medical materiel.

c. The OSL Standing Operating Procedure (SOP) will address ordering supplies, closing the shelter, and preparation for transport. SOP templates are provided at Appendix g and h.

4-3. Forces Command (FORSCOM) NOTIFICATION.

a. The USAMMA Strategic Capabilities and Materiel Directorate will notify Forces Command (FORSCOM) of the request or requirement to deploy a CT Scanner. The notification shall address the following:

(1) Request FORSCOM identify a Medical Equipment Repairer, MOS 91A, who has received manufacturer specialized training on the field CT Scanner. The trained repairer should accompany the CT Scanner to the deployment or arrive shortly after the equipment is fielded. (The USAMMA National Maintenance Point maintains an informal list of CT trained 91A's that can be provided to FORSCOM.)
(2) Request theater clearance and specialized familiarization or training when the a USAMMA Fielding Team is needed or to prepare members for deployment.

4-4. TRANSPORTATION ARRANGEMENTS. FDSD will assist the OSL with coordinating transportation from the OSL site to the deployment location.

4-5. SPECIALIZED INSTRUCTIONS.

(a) ISO shelter and MILVAN Safety Certification. ISO and MILVAN Container Safety Certification will be verified before shipment IAW MIL-HDBK 138A (Container Inspection Handbook for Commercial and Military Intermodal Containers). Ensure that current Container Safety Certification, DD Form 2282, stickers are applied to the Safety Approval Plate on the ISO shelter and MILVAN.

(b) CFE and K2000 Electronic Documentation. Information on appendix D. Philips Medical System, formally Marconi Medical Systems (formally Picker International) provides periodically updated series of CD-ROM material that contains documentation on the CT scanner in electronic format. Contact the USAMMA, National Maintenance Point (DSN 343-4376) for instructions on receiving the latest revision and specific system/computer password information. The electronic format replaces much of the paper documentation.

Appendix A - CT Scanner Non-Medical ASIOE

NSN	Nomenclature	Quantity	LIN
	Ramp, ISO-ISO	1	
	Ramp, ISO-Ground	1	
4120-01-130-4149	Air Conditioner, Heater	2	A26852
4120-01-150-8112	Air Conditioner, Heater		A26852
4120-01-283-4096	Air Conditioner, Heater		A26852
4440-Non-Standard	Dehumidifier, Space	1	
4520-01-254-8548	Heater, Duct Type, Portable	1	H24907
6110-01-248-6671	Panel, Power Distribution (M-400)	1	
6110-01-251-0402	Electrical Distribution box (A box)	1	
6150-01-220-5587	Cable Assembly, Power, Electrical 100 Amp, 50’	1	
6150-01-220-5588	Cable Assembly, Power, Electrical 60 Ampere, 100’	1	
6150-01-256-6300	Pigtail, 100 Ampere	1	
6150-01-256-6301	Pigtail, 60 Ampere	1	
6150-01-308-5671	Feeder System, Electrical DISE, 100 Ampere, M40	1	
6230-01-242-2016	Light Set, General Illumination (4 Bruce lights & case)	1	
6545-01-372-2623	MMS bump through door, ISO	2	
6610-01-242-6691	Stand, Distribution	1	
8115-01-225-8440	Container Cargo (MILVAN)	1	
8340-01-185-2614	Tent 16’ x 20’ Medical (TEMPER)	1	T71619
8340-01-186-3022	Tent Liner, End Section, Temperate	2	
8340-01-186-3023	Tent Liner, Intermediate Section, Temperate	1	
8340-01-186-3026	Vestibule, Tent	2	
8340-01-213-0921	Tent Liner, End Section, Desert	2	
8340-01-260-7452	Passageway, Tent (ISO-TEMPER)	1	
8340-01-263-2546	Door, Tent, (TEMPER, Bump through door)	2	
8340-01-277-0620	Passageway, Tent, (ISO-ISO)	1	
8340-01-392-0924	Tent Liner, Intermediate Section, Desert	1	
	Toshiba, 415CS/810 Satellite Pro, Portable Computer (Various models)	1	
	CD-ROM Documentation (CFE – K2000) latest version		

NOTE: Not all above items are Basic Issue Items (BII). BII is selected for a specific mission.

Appendix B - CT Scanner Medical ASIOE

NSN	Nomenclature	Quantity	LIN
6515-01-291-1199	Defibrillator / Monitor-Recorder	1	D86072
6530-01-308-7740	Sink Unit, Surgical Scrub	1	S91263
6525-01-425-0176	Scanner, CT	1	
6525-01-424-4160	Kodak / 3M Laser Imager Plus (8700 dual input)	1	
6525-01-426-6753	CT Automatic Injector System, LF 9000	1	

Appendix C - CT Scanner Components, Manufacturer part ID

Catalog #	Nomenclature	Quantity	Check
CT6002	PQS System	1	
CT6554	Mark II X-ray Tube (or see below)	1	
	Rhino High Capacity X-ray Tube	1	
CT6102	Control Center (Operators Console)	1	
CT6225	1 GB System Disk	1	
CT6200	Cassette Tape Drive	1	
CT6302	Image Processing System	1	
CT6442	Q-Pro II Software License	1	
CT 6401	Volume MPR Software	1	
CT6504	Advanced DSP	1	
CT6800	Laser Digital Interface	1	
CT6700	ACR / NEMA DICOM Module	1	
---	Power Conditioner	1	
---	Operator and Service Manuals	1	
CT6832	ZAP – 16 Spiral Package	1	
CT6114	Remote Diagnostic Station – RDS -3	1	
CT6112	PQ RDS Fiber Optic Modem	1	
CT4641	Kodak / 3M Laser Imager Plus (dual input)	1	
CT0003	Liebel Flarsheim Pedestal Mounted Contrast Delivery System CT 9000	1	
	Lead Drape, w/mounting rail, x-ray protection, six panel, desert/camouflage (rail, PN 95358, and hangers are obsolete, see below)	1	
17831 rev XX	Curtain Rail Assembly (consists of aluminum rail and plastic roller hangers)		
	Operator Chair, Ergonomic, 5 wheel	2	
	2 Panel X-ray film Viewer (wall mounted)	1	
	208 /480 VAC 3 phase, 50 KVA step-up transformer	1	
	CT interface - A-D modem	1	

	30 M (97') Fiberoptic Cable, from CT A-D modem interface to D-A modem RDS interface	1	
	RDS interface - D-A modem	1	
86832	Spindle Clamp (T-handle screw to secure couch to floor)	4	

NOTE: Not all above items are Basic Issue Items (BII). BII is selected for a specific mission.

Appendix D - Laptop Computer & Documentation

NOTE: The following list of components is representative of the laptop computer and associated elements. Over time, the make and model numbers may be different.

Part Number	Model Number	Nomenclature	Quantity	Check
PA 2653U through PR1241U VCD	415 CS through 440 CDX	Toshiba, 415CS/810 Satellite Pro, Portable Computer	1	
XM-1502B	RA 70319N	Toshiba CD ROM Drive (FDD)	1	
		Toshiba 3 ½" Disk Drive FDDSA09	1	
	PA2611U	Toshiba Case for CD drive	1	
	PA2450U	Toshiba AC adapter	1	
	XJ1336 / XJ3288 MKZ0801A	U.S. Robotics Modem 33.6 KBPS or Megahertz 28.8	1	
		120 VAC line Cord for computer	1	
		Telephone cord for modem	1	
		Toshiba CD-ROM CD Utilities & Drivers	1	
		Toshiba Companion Diskette and guide book	1	
		U.S. Robotics Modem Installation	1	
		U.S. Robotics Modem Users Guide	1	
		U.S. Robotics Fax Works Users	1	
		U.S. Robotics Fax Works Installation	2	
		Toshiba, CD ROM "Extra"	1	
		Toshiba Users Guide, Booklet	1	
		Toshiba, Internal Modem, Users Guide	1	
		Windows 95 manual	1	

NOTE: With CD-ROM provided, the laptop computer is used for display of information and to present troubleshooting and typical maintenance function. This list applies only to those scanners that had a laptop computer included as a deliverable on the DSCP contract.

Appendix E - CT Support Software & Documentation

Part Number	Revision	Nomenclature	QTY	Check
Laser Imager Documentation				
		3M MISD Service Collection on CD-ROM	1	
Operators Guide		3M DryView 8700 Laser Imager	1	
Service Manual		3M DryView 8700 Laser Imager	1	
78-8077-4490-5	Contact Kodak for availability and price.	"Hard Lock Key" This is a mechanical hardware "dongle" which interfaces the imager mother board to laptop null modem cable. This item is used for software upgrades or for calibration only. DS/GS Maintenance	1	
Questor Service Documentation – Requires Password to use				
377655	1.3	Questor Interface	1	
377796	1.1	CT Parts List Data Disk	1	
377366	1.1	Passport	1	
377200	1.5	KOAN	1	
377202	1.2	Worldview	1	
377201	1.2	Testview	1	
377204	1.2	PQ 2000 Questor	1	
377207	1.4	PQ 2000 HyperDoc Set A	1 of 4	
377207	1.4	PQ 2000 HyperDoc Set B	1 of 4	
377207	1.4	PQ 2000 HyperDoc Set C	1 of 3	
377280	1.3	IQ HyperDoc Data Disk Set A	1 of 4	
377280	1.3	IQ HyperDoc Data Disk Set B	1 of 3	
377280	1.3	IQ HyperDoc Data Disk Set B	1 of 4	
NOTE: above electronic documentation may be replaced by CD-ROM data disks as follows:				
	12-11-98	QUESTOR Electronic Documentation	1	either
	Rev 000512	Questor K2000 PQ Series	1	either
	Rev 000522	Marconi – K 2000 Software w/ Internet explorer 5, Adobe Acrobat	1	
Fuji Computed Radiography Equipment and Teleradiology function Not Standard, T-MED and Teleradiology function only				
007-200-07	3.1 Aug 95	FUJI FCR AC-3 Service Manual	1	
3M 9440		Print Server for DICOM (PSD) Service Manual		
Marconi (ex-Picker) CT Service Manual – Paper documentation Not latest or required version				
T55E-1115	C872:S18	PQ Series System Software User Guide Service Manual	1	
T55E-319	C872:S3	PQ Theory	1	

T55E-1159	C872:I1 Q-	Series Installation Service Manual		
T55E-1070	C872:S17	IQ/PQ 4.25 Diagnostics (rev in Process) Service Manual	1	
T55E-327	C872:S12	IQ Series System Software User Guide Service Manual	1	
T55E-388	C862:S21	IQ Series Performance Test Service Manual	1	
T55E-154	C862:S7	IQ Series Calibration Service Manual	1	
		Q-Series, Student Manual	1	

Appendix F - Medical Materiel Set (MMS) D432 (LIN M09826)

Inventory List for Medical Supplies

NSN	Nomenclature	QTY	P & D item
4210-00-965-1107	Extinguisher Fire Hand Type 10lb	1	
5411-01-295-3433	Shelter: Tactical Expandable One-side LIN SO1291	1	
6240-00-143-3071	Lamp Incandescent, 15 Watt	6	
6505-00-153-8809	Lubricant Surgical 4 Oz (113.4 Gm	1	
6505-01-100-7984	Iothalamate Meglumine Injection USP 60% 30ml Vial, 50's	1	YES
6505-01-204-9754	Barium Sulfate Suspension Orange Flavor 15fl oz	1	
6510-00-786-3736	Pad Isopropyl Alcohol Impregnated Non-woven Cotton	1	
6510-00-913-7909	Bandage Adhesive .75 By 3 Inches Flesh 300s	1	
6510-00-926-8882	Adhesive Tape Surgical Porous Woven 1"X 10yd 12s	1	
6510-01-010-0307	Pad Povidone-Iodine Impregnated Sterile Cotton/Rayon 2x1.	1	
6515-00-117-9021	Intravenous Injection Set Vented 15 Drops Per Ml, 78" L	1	
6515-00-226-7692	Glove Patient Exam & Treatment, Large, Ambidextrous Prep	1	
6515-00-433-2089	Intravenous Injection Set W/Metering Chamber Venous	1	
6515-00-754-0412	Syringe Hypo General Purpose, 10ml Capacity, Luer Slip W/O Needle, Concentric	1	
6515-00-754-2834	Needle Hypo C13a General Purpose 18ga 1.438-1.562" Long Luer Lock	1	
6515-00-935-4088	Stethoscope Adjustable Size 24" Long Two Position Valve Brass/A	2	
6515-01-008-7972	Catheter & Needle Unit Iv D12 20ga 3ml Syringe Cap Radiopaque	1	
6515-01-105-0614	Intravenous Injection Set 12 Components Non-vented	2	
6515-01-121-6480	Cuff Sphygmomanometer Adult Nonconductive 19x102	2	

Appendix E (Continued)

NSN	Nomenclature	QTY	P & D item
6515-01-418-2346 W 6515-01-465-3285 W	Monitor-Recorder ECG	1	
6515-01-362-7447 W 6515-01-422-6109 J	Monitor Patient Vital Signs 120/220v 50/60hz Ac	1	
6515-01-338-4708	Administration Set 19 gauge X 7/8" Sterile, Disposable	1	
6515-01-149-8842	Gloves Surgeons General Surgery Size 8 Rubber Pre-powdered, S	1	
6525-01-117-0492	Block Set Radiographic Positioning Polyurethane	1	
6525-01-419-7886 W 6525-01-425-0176 J	Computed Tomography Scanner, Field (CT Scanner):	1	
6525-01-424-3666	Film Laser Imaging Dry Process Blue Infrared Sensitive	2	Yes
6525-01-424-4158	Pad Gantry Cat Scan Foam Covered Vinyl 1"Thick	1	
6525-01-424-4160	Laser Imager Dry Process Model 8700	1	
6525-01-426-6753	CT Auto Injector System, Model 9000 LF	1	
6530-00-770-9220	Basin Emesis Corrosion Resisting Steel	2	
6530-01-016-7693	Enema Administration Set 3000ml Capacity Bag Dou	1	
6530-01-131-0051	Stand Intravenous Irrigation Container CRS 106"H	2	
6530-01-162-8237	Cabinet Pharmaceutical Upper Section Steel 36" L	1	
6530-01-163-1899	Sink Unit, Scrub, Field Hospital	1	
6530-01-163-3760	Cabinet Pharmaceutical Base Section Steel 23" De	1	
6530-01-174-2336	Light Floor Operating And Examining 120/240 VAC Th	1	
6532-00-935-9765	Apron X-Ray Protective Lightweight 38x24" Coat S	6	
7105-00-269-8463	Chair Folding W/O Arms Steel Gray Enamel	6	
7125-00-059-2355	Shelving Storage & Display Metal Enameled Gray 4	2	
7240-00-089-3827	Can Water Military Plastic Color Is Lusterless S	2	
7350-00-290-0574	Cup Paper Water Pleated 3-1/4 Oz 5000s	1	
7530-00-612-4000	Envelope Photographic Negative 14.5"W 17.5"Lg B8	1	

Appendix G - Recovery Team Checklist

Organization	Phone #	Interest	Action Started	Action Completed
USAMMA	FDSD	Contact Activity, POC		
		Pre-site Visit		
		Engineer needed		
		Transportation Office		
		Trucking Company		
		Destination		
		Special Instructions		
		Delivery schedule		

Appendix H - Operational Storage SOP Template

Operational Storage Plan

1. Configure CT scanner and ASIOE, similar to “as-used” in deployment in a temperature stable environment (warehouse).

2. Electrically connect support components and initiate power to the system. Following recommended warm-up procedure identified in the operator and service manuals specific to the equipment, perform systems check on the:

   a. CT scanner

   b. Fiberoptic link from CT scanner console to Remote Diagnostic Station (RDS).

   c. Laser imager, 3M / Kodak 8700

   d. Automatic dye injector, LF CT 9000

   e. Environmental Control Unit (ECU) (both heating and cooling mode)

   f. H-82 120K BTU heater. This checkout and performance verification should be conducted outside. Diesel fuel (JP-8 or equivalent) shall be removed from the tank following performance verification.

3. The CT scanner and laser imager will be operationally cycled on the manufacturers scheduled basis. For items without a periodic Preventive Maintenance Checks and Services (PMCS) schedule, those items will be operationally tested on an annual basis.

4. The CT scanner and laser imager will have Calibration, Verification, and Certification (CVC) performed on an annual basis, and at any time that a component replacement would affect the performance or calibration characteristics of the device.

5. The patient monitor and other battery-operated equipment shall be performance verified on a semi-annual basis. Ensure that Ni-Cd or lead-acid batteries (if used in the equipment) are date marked with an expiration date of two years from new.

6. The CT scanner (microcontroller) maintenance chip (which permits biomedical maintainer access to the CT scanner computer for in depth diagnostics, troubleshooting and additional performance tests and checks) will be replaced at six-month intervals in accord with manufacturers instructions.

7. At any time during operational storage, additions of revised or new versions of software or hardware for the CT scanner, laser imager or dye injector will have CVC services performed at the completion of installation.

8. At the completion of performance tests, each equipment item will be protected from the elements by draping, packing materials, containerization, or other suitable protection and replaced or located in the appropriate container (ISO shelter or MILVAN) for storage.

9. Take note of any Potency and Dated (P&D) medical material, initiate requisitions and replace with new material before expiration date on the item.

Appendix I - Deployment SOP Template

1. Preparation for redeployment places the CT scanner and all ASIOE into shipping configuration to preclude damage to the equipment and to ensure immediate use at deployment destination.

2. Note date of last operational test of the CT scanner and ASIOE. If that date is less than one-half of the scheduled period (such as less than 3 months on a six-month schedule) for inspection, prepare the system for transport. If the period from the last inspection is greater than one-half of the inspection schedule, perform normal inspection and performance verification in accord with the Operational Storage Plan.

3. Upon completion of inspection, proceed as follows:

4. Ensure that a 30 day supply of "start-up supplies" (Laser imager film and CT contrast agents are ordered and available to be forwarded to the destination of the CT scanner. If time permits, such materiel may be included in the ISO-shelter for immediate use at final destination. (See MMS 432 for list of P & D items as well as for quantity to be ordered).

5. Prepare CT scanner for deployment by relocating patient support, gantry frame and other CT components into transport mode (see instructions on wall near operators position for details). Prepare ASIOE that is to be co-located in the ISO-shelter.

6. Preparation of the laser imager for transport. Use the 3M Dry View ^{tm} 8700 Laser imager, Operator's guide for overall equipment description. Block and brace the internal exposure module (black box mounted on rubber shock absorbers) to prevent motion. Protect the heated drum (film developer drum) by covering with heavy wrapping paper. Make sure the paper extends over the visible area of the drum. Secure the output transport at the top of the imager, to the main chassis with the supplied screw and lockwasher combination. Following such preparation for storage, relocate the imager to the operator vicinity. The laser imager is bolted to the floor immediately to the side of the operators position. Other components of the CT scanner, such as the RDS, fiberoptic cable should be packed in containers sufficient in strength to withstand transport and provide some protection from the elements. Mark two exterior surfaces of the containers with identification of contents.

7. The dye injector needs to be securely packed to prevent damage to the syringe heater and the powerhead. Place the power supply, power cables and operators keypad in a suitable container large enough to hold all components of the injector. Ensure that the contents are suitably packed to prevent contact with each other and to protect all from transportation damage. Mark two exterior surfaces of the container with identification of contents.

8. Ensure that the MILVAN is packed with the CT scanner ASIOE to equalize weight over the floor surface. As a matter of convenience, the ECU's may be stacked, and should be bolted together. Because the ECU's pose an approximate load of 1600 lbs. and are

generally located near the end doors of the MILVAN. The large load should be offset or balanced by a similar load at the other end of the MILVAN (closed end). Loading the MILVAN for balance is important, as the CT scanner must be approved by the 'loadmaster' or other transport authority as balanced before loading on an aircraft.

9. Prepare a component list of materials stored in the MILVAN and the ISO-shelter. Make three copies of each list. Place one inside the container in a protective envelope. This information will assist the next person who performs inventory on the medical equipment set. Place the second list in a protective envelope and attach it to a secure position on the outer surface of the ISO-shelter and MILVAN. Place the third copy into the records that will accompany the set to the next destination.

10. Ensure that a latest version CD-ROM of the Questor electronic documentation is shipped with the CT. Note that the CD-ROM can be loaded on a computer that accompanies the scanner or forwarded to the deployed organization for action to install the documentation on their computer. In either instance, contact the USAMMA, NMP to provide additional instructions on the password requirement of the documentation.

Appendix J - Equipment Status Report Template

EQUIPMENT STATUS REPORT

Field CT Scanner & ASIOE

UNIT INFORMATION

Organization:

Name and telephone number of person completing the report:

Date report completed:

CT SCANNER

Date Scanner last received scheduled services, i.e., PMCS, CVC, Safety testing:

Scheduled services were performed by:

PMCS -- Contractor In-House

CVC ---- Contractor In-House

Safety-- Contractor In-House

At the time of this report is the CT Scanner completely operational per the manufacturers standards? YES NO

If NO, answer the following:

Malfunction:

Date expected to be resolved/repaired:

Explain below any problems not addressed above that would or could make the CT Scanner non-deployable.

ASIOE

Has all the medical and non-medical ASIOE received scheduled services? YES NO

If NO, explain:

Is all the medical and non-medical ASIOE functioning per the manufacturer's specifications?

YES NO

If NO, list below those items that are not functioning and dates they are expected to be operational.

ISO Shelter

Date last certified:

Are there any problems with the shelter? YES NO

If YES, explain:

Appendix K - Packing the 3M / Kodak “DRYVIEW” film processor

1. Prior to packing the film processor, electrical power to the unit must be connected, and the processor turned "ON". The film storage cassette (located under the “Supply Door” on the front panel) requires the flexible rollback and sealing of the light-tight seal on the cassette. If the power is "OFF" and the supply door is opened for ANY reason, the film in the storage cassette will be exposed to light and be unusable.

2. With the unit "ON", use the control panel area to reseal the film cassette. After the cassette is sealed, you should turn "OFF" the electrical power to the processor.

3. Open the left side door by lifting up on the bar located at the bottom of the door. The bar is located a few inches in from the front of the unit. With the left door open, push the “Film door” release button located at the top right side of the unit. The front supply door will open. Remove the partially used cassette and place it in a safe storage location. Note that the cassette contents are temperature sensitive, and the film will blacken if the cassette is exposed to temperatures higher than 85^{O} F.

4. Disconnect the electrical supply cord, and any computer feeder connections on the left rear panel of the processor. Stow the power cord. Secure the feeder cables along the top edge of the ISO-shelter wall. Secure the cables with the Velcro (hook and pile) fastener material.

5. Open the top cover, ensure the support rod is in place. Locate the small black block with two cap screws on the right side of the processor/exit assembly, loosen both screws, and ensure the locking block is moved to the right. Press the release lever on the right side of the unit. Pull the processor/exit assembly towards the front of the unit. This is done to give access to the interior of the unit.

6. Remove the front panel that is secured to the processor at the top, with three screws and metal bar. After removal of the screws, lift the panel straight up and place to the side. Removal of the front panel is necessary to access and secure the internal components of the system.

7. Raise and secure the processor cover (Black plastic cover over the rubberized drum). Before proceeding with packing, ensure that the processor roller is cool to the touch.

8. Place a 1/8" thick by 14" long by 14" wide foam plastic across the width of the rubberized roller, in line with the set of stainless steel (SS) rollers in the processor cover. Verify that as the cover is closed, the plastic foam prevents direct contact between the SS rollers and rubberized drum.

9. The film-imaging chamber (mounted with four rubber shock absorbers) must be secured to the main chassis. This is accomplished by the use of a wood block to make an interference fit between the components, and prevent mechanical motion of the chamber.

10. Once the film chamber is secure, remount the front panel and close the left side door..

11. Locate and secure the laser imager in position for transport/storage.

Appendix K - Deployment and Stowage Instructions

INTRODUCTION

This appendix provides deployment and stowage instructions for the Picker DEPMEDS Transportable CT scanner system. It has two sections:
Deployment Instructions (Section I)
Stowage Instructions (Section II)
Other documentation provided by Philips Medical Systems, formally Marconi Medical Systems (formally Picker International) is included with the service documentation. The material is identified as follows:

- Copies of equipment instructional labels (Section III)
- Other documentation specific to this equipment (Section IV)

HOW TO USE THIS APPENDIX

- This appendix: All users (experienced, familiar, or inexperienced) should use this appendix when needing full instructions for deploying or stowing the transportable scanner. First time users should become familiar with the contents of this appendix before they commence action.
- Equipment Labels: Experienced users who are familiar with the procedure should reference the Task Sequence Instruction (posted near the console) and then follow the specific Point-of-Performance labels (POP Labels) for deployment or stowage. Use the appendix to provide specific task details.
- Task Sequence Instruction The task sequence instruction provides only task sequence information. This instruction/guide lists the tasks in order of required task performance. Experienced users will find this instruction sufficient. Familiar users should use this Task Reference Instruction and the Equipment Point-of-Performance labels and refer to the manual when necessary.

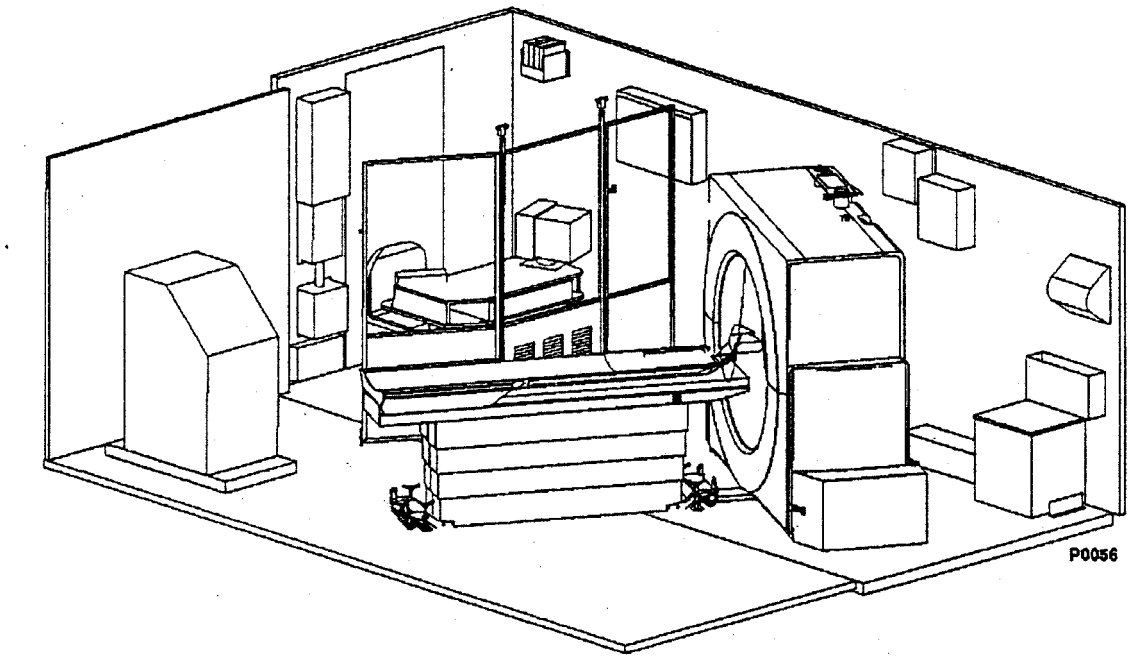
Published by Marconi Medical Systems (formally Picker International); Highland Heights, Ohio as a document entitled: Transportable CT Scanner C872:TM4

First printing: 30 Jan 1996
Revised by USAMMA, Fort Detrick, Frederick MD, July 2000

SECTION I

DEPLOYMENT INSTRUCTIONS

This section describes the preparation of the CT scanner and its components for functional operation. This process involves relocation of some equipment, releasing equipment immobilization locks, and securing appropriate electrical service.



GENERAL INSTRUCTIONS:

Locate and level the ISO-shelter box at the intended location of use. The ISO-shelter should not be expanded. It will be necessary to properly support the expandable wall (the patient support couch) floor support beam of the ISO-shelter by the use of a scissors jack. The scissors jack or other beam support must be installed before expanding the ISO. Electrical power should be available.

DO NOT POWER THE SCANNER UNTIL INSTRUCTED.

General Instructions for set-up and packing the scanner are near the personnel door on the fixed wall to the left side of the Operator Console. Additional instructions are located on the equipment itself; that is, specific instructions are located on the Gantry, the Patient Support, and the Laser Imager.

SPECIFIC INSTRUCTIONS:

NOTE: The installer must have access to the interior of the ISO-shelter, before expansion of the ISO-shelter.

NOTE: Some early DEPMEDS CT scanners were provisioned with protective canvas covers for the gantry, patient support and operator console. Ensure that the equipment covers are removed from the equipment at the appropriate time and that they are folded and stored to preclude damage to the material or zippers.

1. Preparation for supporting the CT and minimizing vibration of the ISO shelter.

1-1. After the ISO-shelter is located, but prior to opening the expandable section. Recover the scissors jack and handle from the toolbox (stored near the step-up transformer at the rear of the gantry). The jack will be used to support the expandable wall floor beam of the ISO-shelter.
1-2. Position ISO-shelter at the location of intended use and raise the ISO-shelter approximately 5 inches off the ground. Level the ISO-shelter with the ISO-shelter leveling jacks.
1-3. Retrieve the scissors jack from the ISO-shelter toolbox.
1-4. Place the scissors jack under the I-Beam, mid span, on the expandable side of the ISO-shelter. Place a load spreading material; such as a 12" x 12" x ½"inch thick plywood panel under the jack.
1-5. Raise the scissors jack until it firmly supports the beam.

2. Alternate procedure - Place suitable block or dunnage material (or blocks) under the expandable wall I-Beam and lower the ISO-shelter onto the block(s).
2-1. Maintain a level condition of the shelter while using the beam and support dunnage as the point of reference.
2-2. Adjust the leveling jacks to ensure that the ISO shelter floor beam supports the patient support and eliminates any floor bounce.
2-3. Do not lower the exterior jacks to make the center support the primary load bearing structure under the ISO shelter.

3. Expand the ISO-shelter following standard procedures.

3-1. Connect electrical power cables to the ISO-shelter. The 60 Ampere service cable operates the lights, interior 120 VAC receptacles and the environmental control unit (ECU). The 100-Ampere service is exclusively for the use of the scanner.
3-2. Mount all internal 120 VAC outlets
3-3. Do not power the scanner at this time.

WARNING! ELECTRICAL HAZARD
LETHAL VOLTAGES OF 208 VAC, UP TO 480 VAC, 50/60 HZ ARE PRESENT DURING ANY PROCEDURE THAT PERMITS PHYSICAL ACCESS TO ELECTRICAL CIRCUITS. FOLLOW GOOD ELECTRICAL SAFETY PRACTICE DURING LINE VOLTAGE MEASUREMENTS. FAILURE TO COMPLY CAN RESULT IN SERIOUS INJURY OR DEATH.

3-4. Activate the main interior circuit breaker. Check for operation of interior lights.

3-5. Turn on the ECU, cooling mode. Determine if the phase relationship is correct. The fan on the top of the ECU will blow air upward if the electrical phase is correct.
3-6. If the phase relationship is wrong, check the source of electrical power. Have the generator operator swap any two of the phase cables at the power source.
3-7. Power up the CT scanner system by pressing the START button on the left side of the main contactor box located underneath the main power panel. The box contains the Picker Phase Loss Detection circuit and CT main power contactor. The main power contactor will latch when the phase sequence is correct and the incoming voltage is above 188 VAC (as measured from phase to phase). Once energized, the contactor will provide electrical power to the step-up transformer at the rear of the gantry.
3-8. If the main contactor does not remain closed, verify the incoming voltage, and correct the power source as necessary. If necessary to correct the phase connections inside the box, may swap two of the phase lines at the main contactor.
3-9. Notify engineers or generator support personnel if electrical power does not come on.

4. Release Patient Support from Transport Location

NOTE: Some DEPMEDS CT scanners are provided with protective canvas covers for the gantry, patient support, and operator console. Ensure that they are folded and stored to preclude damage to the material or zippers.

4-1. Unscrew the four "T" handle bolts that secure the Patient Support to the floor. Keep these with the Patient Support.
4-2. Locate the jackscrews at each end of the patient support. Each jackscrew has a pinned small handle at the top. These jackscrews will be used to lower and raise the patient support.

CAUTION! MECHANICAL STRESS HAZARD
MAINTAIN JACKSCREW ROTATION WITHIN ONE TURN OF EACH OTHER WHILE RAISING OR LOWERING PATIENT SUPPORT, AS REQUIRED IN THE FOLLOWING STEP. FAILURE TO COMPLY MAY STRESS OR DAMAGE THE JACKSCREWS OR MECHANICAL SUPPORT.

4-3. Lower the Patient Support transport wheels to the floor (turn handles CW). Fully raise the Patient Support off the transport blocks (aluminum shipping blocks) by turning the handles clockwise (CW). (It may be necessary to physically lift the Patient Support slightly to pull the transport blocks out.)
4-4. Temporarily place the transport blocks out of the way (on top of the Patient Support). They will be later stowed inside the Gantry end stands.
4-5. Locate the head end of the patient support near the front bore of the of Gantry. The aluminum channel protruding from the head end of the patient support contains a number of electrical connections.

STOP! The patient support will be electrically connected to the gantry later. At this time, continue the deployment of the Gantry.

5. Deploy Gantry

IMPORTANT: Physically insect and verify that there are no foreign bodies, screws, dirt or debris under the gantry. Any materials trapped under the gantry will prevent full contact with the ISO-shelter floor and may lead to misalignment of the gantry to patient support (they are mounted at a right angle (90^{o} to each other) and introduce a "vibration artifact" in CT images.

5-1. Locate the two Gantry alignment pins at the rear of the gantry. They are at the bottom rear side of each Gantry column. Remove the safety pins by pushing on the top of the pin while simultaneously pulling it out of the locking pin. The alignment pins will drop and will physically locate the gantry position in the ISO shelter in relation to the couch.
5-2. Reinsert the locking pin after lowering each alignment pin.
5-3. Remove the Gantry jack covers. The sheet metal covers are located at each side of the Gantry and cover the jacking mechanism and the spring shock absorber system. Two rubber band hold-downs secure the cover. Release the hold-downs and move the front edge of the cover away from the Gantry while pivoting the rear end of the cover. Then remove each cover and set it aside.

6. Prepare to lower the Gantry to the ISO-shelter floor surface

CAUTION! MECHANICAL STRESS INSTRUCTION
MAINTAIN EACH JACKSCREW ROTATION AT THE GANTRY WITHIN ONE TURN OF EACH OTHER. FAILURE TO COMPLY MAY STRESS THE MECHANICAL ASSEMBLY, CAUSE THE SCREWS TO BIND, OR SHEAR OFF THE SOCKET WRENCH CONNECTION.

6-1. Observe the two alignment blocks on the lower rear of the gantry. Ensure that they maintain alignment, so that as the Gantry approaches the floor, the pins on the gantry will mate with their respective index on the ISO-shelter floor.

6-2. Lower the Gantry (first, the pair of screws on one side, then the other side) by turning the jackscrews as a pair, counter-clock wise (CCW). You must synchronize the rotation of the two jackscrews within one turn of each other while lowering Gantry to its operating position.

6-3. Verify that the gantry alignment pins (Step 5.2) remain aligned in the floor mounting blocks while lowering Gantry.

6-4. Lower Gantry completely to the floor. All lifting jackscrews should be fully counterclockwise (CCW), but not tight.

7. Locate and stow the support pins on the top of the gantry.

7-1. The pins prevent any lateral motion when the gantry is supported on the shock absorbing springs. The pins are now free of the receptacles that are mounted on the ceiling.

7-2. Lower and secure the 2 Gantry Shipping pins. Each one is held in place with a safety pin. PULL this pin directly to the side to remove it.

7-3. Replace the safety pin into the Shipping pin after it is lowered.

8. Gantry Tilt Lock.

8-1. From the rear of the Gantry. Release the security strap that secures the Gantry Tilt Lock (handle and cam lock arm) located at rear of Gantry. Rotate the lever CCW from a near vertical (locked) position to the use position near the floor of the ISO.

WARNING! MOTION HAZARD
MAINTAIN A FIRM GRIP ON THE HANDLE WHEN RELEASING THE WEIGHT OF THE TILTED GANTRY. FAILURE TO COMPLY CAN RESULT IN DAMAGE TO THE GANTRY OR INJURY TO YOU.

8-2. Stow Patient Support Transport Blocks on pins provided near the jacks. A label identifies the locations of these pins. Store one block on each side of the gantry.

8-3. Reinstall jackscrew covers onto the Gantry end stands. Put the rear end of the cover on first, then swing the front end around. Secure both rubber hooks.

8-4. Return to the installation of the PATIENT SUPPORT.

9. Secure and Connect Patient Support.

9-1. Locate and carefully remove the 3 communication and power cables and the ground wire cable from the cable trough and foot switch assembly at the front of the Gantry.

9-2. Position Patient Support in front of the Gantry. Move the Patient Support close to, but not against the cable trough.

9-3. Raise the foot switch cover at the front of the Patient Support and connect the electrical connections between the Patient Support and the Gantry. Connect the ground wires and the three (3) cable connections.

9-4. Physically align the Patient Support floor mounting plate holes with the insert holes in the ISO-shelter floor.

9-5. Thread the four T-handle bolts into the floor inserts.

9-6. Lower the Patient Support to floor. Fully raise the transport wheels.

9-7. Tighten the "T" handle securing bolts.

9-8 Release the Couch Top lock, located on the right side of the top.

9-9. Use 2” by 2” duct tape patches to cover exposed holes in the floor area around the Patient Support. NOTE: This action taken now will make it easier when securing the patient support for transport.

9-10. This completes assembly of the Patient support to the gantry.

10. Deploy Laser Imager / Film Camera

10-1. Locate the 9/16” box wrench from the ISO-shelter toolbox. Remove and temporarily store the bolts that secure the laser imager to the aluminum plate near the side of the operator console.

10-2. Raise the camera platform off the floor using the screw jack handles on the platform. Rotate the handles in a clockwise (CW) direction.

10-3. Move the camera to the specified operational location in the ISO-shelter. Typically, this is in the corner to the far right of the Operator's Console.

10-4. Lower the camera to the floor by rotating the jackscrew handles in a counter clockwise (CCW) direction.

10-5. Return the mounting bolts to their locations in the floor.

10-6. Connect the data cables to the camera. These cables are stowed on the wall behind the Console. They are part of a direct wired connection to the CT scanner.

10-7. Connect Laser Imager / camera to the specified 208 VAC outlet. The outlet is located at the rear of the imager on the expandable wall.

10-8. Release the Camera Top-Cover Strap and stow it behind the camera on the support platform.

10-9. Remove the internal shipping restraints from inside the laser imager in accordance with the manufacturer's instructions.

11. Setup Operators Console Area (TV Monitor, keyboard, chair and leaded screen)

11-1. Release strap harness that secures image monitor to the operators work surface. Verify that all power and RGB (Red, Blue, & Green) signal connections from the scanner are connected to the rear of the monitor (120 VAC power cord and RGB BNC connectors). Do not remove the straps from the Console. Angle the monitor, as appropriate, for use.

11-2. Remove operator keyboard from Console shelf. Allow shock cords to hang at back of Console. Place Keyboard at its operating position and plug keyboard into left side of Console.

11-3. Locate the Console chair from behind the Gantry. Release Console chair from its restraints. Do not remove the strap(s) from the transformer.

11-4. From a position in front of the operators' console, open and secure (at top and bottom) the leaded plastic Operator radiation shields.

12. Set up Accessory Equipment

12-1. Install the Leaded Drape on the ISO shelter ceiling, over the mid-wall opening (roof location) to the right of the operator console.

12-2. Remove drape track from the stowed position on the fixed wall near Operator Console. Remove the thumbscrew from the end; slide the track off the keyhole slots.

12-3. Install the track on the ISO shelter ceiling above the patient opening. Place track so that the thumbscrew is on the left side when facing the ISO-shelter opening.

12-.4 Do not install thumbscrew at this time.

12-5. Remove lead drape from its stowed location (generally placed on top of the patient support during transport) and install in track. The tan side of the lead drape should face the inside of the ISO shelter.

CAUTION: the lead drape weighs approximately 80 lbs. (37 kg) and requires two or more people for support and installation without damaging the curtain.

12-6. One person should feed the rollers at the top of the drape into the track while the main weight of the drape is supported by a second person.

12-7. Once the drape is in the track, secure the assembly and track by threading the thumbscrew into ceiling insert.

13. Install the (optional) Remote Display System (RDS)

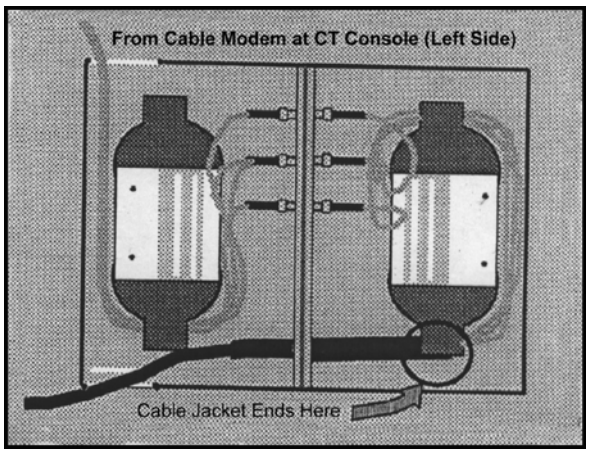
NOTE 1 : The remote workstation permits the physician to review completed exams while new ones are being created, as well as to review in real time, any current examination. It is connected and used when the physician will be at some distance (less than 100') from the CT, but requires access to patient studies.

NOTE 2 : The RDS and interconnecting cables are stored in the MILVAN. The RDS consists of a second 17"color TV monitor, a keyboard, a keyboard power supply and adapter, a 120 VAC power strip, the fiber optic modems, and the 30 meter fiberoptic cable. Locate these items before installation.

13-1. Locate RDS cable and pass through hole in the wall in the ISO shelter. This hole is in the rear of the laser imager and formally was used for a water drain for the sink.

NOTE: The fiber optic cable consists of an armored protective cover over the jacketed set of fiber optic glass fibers. The individual orange colored plastic fibers are fragile Do not try to bend either the cable or fibers in sharp bends. There are two spare fibers in the cable for use if any of the other fibers are broken.

13.2 Connect color-coded fibers to the interface box located on the wall near the personnel entrance door. Match the colors of the fibers you are installing to the colors of the currently installed fibers; that is, red to red, blue to blue, etc. Stow the protective cable caps in the interface box.



13.3 Deploy the RDS fiber optic cable to remote location. Place the RDS monitor in the radiologist work area.

13-4. Set up the RDS components. Connect the 120 VAC power strip to the source of electrical power and connect the keyboard adapter, fiberoptic modem and TV monitor to the strip. The strip incorporates some filtering of the line voltage and provides for spike voltage protection (MOV devices). 120 VAC, 50-60Hz at 10A is required for this equipment.

13-4. Remove the top cover from the modem and connect the individual fibers to their matching connector. Match cable colors (red, blue, etc.) to the colors in the modem.

13-5. Reinstall the cover on the modem and place it on the work surface co-located with the remote monitor.

13-6. Place the monitor on top of the modem. Using the supplied cables, connect the monitor to the modem. Match the cable colors to the connector colors. Locate the keyboard in front of the monitor. Connect the keyboard to the modem by using the two (2) supplied cables and the interconnect box.

13-7. Connect the modem and the monitor to the power source.

13-8. Connect the RGB video cable from the fiberoptic modem to the TV monitor. Connect the fiberoptic cable from the CT scanner to the fiberoptic modem.

13-9. The RDS must be powered up and operational prior to boot up, or turning on the CT scanner. This is necessary for the main computer to recognize the RDS.

13-10. If the RDS was connected and turned on while the CT was in operation, the CT MUST be REBOOTED in order for the RDS to be recognized

NOTE: If the remote display shows wavy lines or otherwise demonstrates poor video synchronization, ensure that the power source for the RDS and the CT originate from the same source of electrical power to reduce the effects of ground loop current.

14. Power up Scanner.

14.1 Power up the CT scanner by pressing the green "ON" button located on side of the main contactor (Phase Loss and Low Voltage Detection circuit, Tycor power Control unit and main contactor). The main contactor is located in back of the operator console for easy access and control of the electrical power to the system.

WARNING! SHOCK HAZARD
DISCONNECT POWER BEFORE CHANGING ELECTRICAL (PHASE) CONNECTIONS. FAILURE TO COMPLY CAN RESULT IN SERIOUS INJURY OR DEATH.

WARNING! SCANNER OPERATION HAZARD
DO NOT CHANGE ANY POWER CONNECTIONS INSIDE THE ISO-SHELTER OR SCANNER. THE PHASE DETECTION CIRCUIT INSIDE THE MAIN CONTACTOR BOX ENSURES PROPER PATIENT SUPPORT (TABLE) OPERATION. FAILURE TO COMPLY CAN RESULT IN SERIOUS INJURY OR DEATH.

14-2. If power does not come on, notify the DPW or post engineer.

14.3. Proceed with normal check out of scanner system only after correct power line conditions have been verified.

14.4. Perform and verify the required actions of the Deployment Checklist:

DEPLOYMENT CHECKLIST

Shelter:
- ISO-Shelter extendable wall. Floor Center Beam supported at mid-span.
- Incoming power verified (208V, 3 Phase)
- Electrical Phases are correct. ECU fan vents upward

Console Area:
- Laser imager floor attachment bolts in, bolt-down holes.
- Operator Leaded Shields deployed into position and secured at ceiling and floor.

Patient Support:
- Secured to floor
- Transport wheels (4 wheels) raised fully.
- Patient support top Unlocked (right side)
- Electrical (2) and Ground wires (2) connected.
- No pinches to patient support / gantry wires or stuck connection on couch release switch.
- Floor Plug Bolts in Bolt-down Holes at Stowage location.
- Duct tape covering exposed holes in the floor around Patient Support.

Gantry:
- Gantry in proper contact with floor.
- Gantry Tilt lock in "unlocked" position (in rear of gantry and on floor).
- Gantry Alignment pins lowered and in holes (Rear, at bottom of gantry).
- Transport pins lowered and secured (at top of gantry).

Auxiliary Equipment: (As Required)
- Entrance curtain and rail installed.
- Laser Imager / Film Camera Deployed
- Remote Display Station Deployed

SECTION II

STOWAGE INSTRUCTIONS

1. While electrical power is available to the CT scanner, ensure that the patient support is brought to the lowest point of travel, that the gantry is at 0 degrees and that the tube heat is below 30%.

1-1. From the gantry position, select the gantry tilt control that will bring the gantry to the O degree position. Verify that the automatic detent feature stops the gantry frame at zero degrees.

1-2. Lower the Patient Support to the bottom of travel.

1-3. From the operator console, request “daily maintenance” on the ELTP (Electro-luminescent Touch Panel) and when instructed, turn the operator key to the “OFF” position at the left side of the console.

CAUTION! FILES CORRUPTION HAZARD
ACTUAL SYSTEM POWER DOWN, AND SYSTEM TURN-OFF IS CONTROLLED BY THE CT COMPUTER, NOT THE KEYSWITCH. FAILURE TO ALLOW FOR SEQUENCED SYSTEM SHUTDOWN WILL CAUSE FILES CORRUPTION.

1-4. Prior to stowage of the CT scanner, the main computer must prepare internal files for archive. The use of the Operator keyswitch allows the computer to perform system archiving.

NOTE: Use of the main contactor to turn off the system may corrupt the computer system files and may make reloading of system software necessary.

1-5. Perform and verify the actions identified on the Deployment Checklist.

2. Stow Auxiliary Equipment.

2-1. Close Operator (leaded plastic) Shields and secure with two (2) rubber clamps. Note that the side to the operator's left must be secured first.

2-2. Stow Entrance Curtain:
The plastic leaded material reduces scatter radiation in the passageway leading to the patient couch, and helps maintain temperature within the ISO shelter.

2-2-1. Remove the thumbscrew from the end of the rail.

2-2-2. With two people, remove the curtain from the rail (80 lbs.)

2-2-3. Place curtain on a clean, flat surface and fold neatly.

2-2-4. Stow the curtain on top of the Patient Support.

2-2-5. Remove the Curtain rail from the patient entrance and relocate it to the storage point on the fixed wall near the Operator's Console. Once in place, install the thumbscrew.

2-3. Stow the Liebel-Flarsheim (LF) dye injector (this is an optional item) and components in the MILVAN.

2.3.1. Remove the power supply from the point of use (hanging from hooks at the cargo (double) door and place it into a suitable storage container.

2.3.2. Collect the power cord to the LF power supply, console cord, power-head cord and hand control cord (if supplied with the system) and place them into the storage container with the power supply

2.3.3. Pack the operator control and operator and maintenance instructions into a suitable container.

2.3.4. Remove and pack the control head into the same container.

2.3.5. Pack the mobile stand.

2.4 Stow the Remote Display Station (RDS) and components (optional items) in the MILVAN.

2-4-1. Disconnect the 120 VAC power strip from the source of power.

2-4-2. Disconnect the TV monitor. Pack it in suitable storage protection.

2-4-3. Disconnect the keyboard power supply, its two cables and the keyboard interconnect box.

2-4-4. Remove the top cover from the Fiber Optic Modem and disconnect the fiber optic connectors.

NOTE: The orange, plastic-covered fibers are fragile. They must not be bent severely. Three fiber optic "wires" are required for proper operation; two are spares.

2-4-5. Reinstall the cover on the modem and suitably pack the modem.

2-4-6. Disconnect the RGB cables between the back of the monitor and the fiber optic modem.

2-4-7. Disconnect the fiber optic cable from the fiber modem and coil onto the provided reel. If the reel cannot be located, coil the cable into a 3’ diameter coil and provide suitable protection from damage.

2-4-8. At the Scanner ISO-shelter, disconnect the six (6) cables from the Fiber Optic Interconnect Box inside the entrance door.

2-4-9. When complete store all parts of the RDS as a unit in the MILVAN. Ensure that suitable protection is provided for the RDS components during storage.

2-5. Stow the Patient Positioning devices (polyurethane foam blocks) at their assigned locations on the wall behind the Gantry. These components are; Head Support extension and under-knee foam block.

2-6. Secure the Water Phantom and case to the front of the Patient Support. Ensure the phantom Holder case latches are secure. During cold weather deployments, the CT scanner will be transported through cold or freezing climates (below 32 degrees F) Remove all the water from the phantom.

2-7. Stow the Scanner Accessories in the box on the fixed wall behind the Gantry. A complete list of the supplied items is on the front of the accessories box.

3. Secure Console Equipment

3-1. Reposition the Monitor so that it is directly over the shipping support at the rear of the monitor. Position the monitor stowage straps around the monitor and tighten. Buckles should be in contact with a top or rear surface of the monitor. The strapping buckles must not contact the front (glass). surface of the monitor.

3-2. Stow the keyboard:(See diagram on the left side of the Console).

3-3. Disconnect keyboard cable from left side of the Console (use a straight pull) and place keyboard at upper right side of console top shelf.

3-4. Raise stowage post in shelf by pushing up from below. Bring elastic stowage cord up and over keyboard. Hook elastic cord over stowage post.

3-5. Stow Keyboard cable neatly under the elastic shock cord.

4. Stow Laser Imager/ Imaging Camera

4-1. While imager has electrical power, eject the film container. Secure the film in a protective container. If the scanner is to be stored for an extended period, dispose or otherwise use the film.

4-2. Turn camera off. Disconnect the one power and two data cables at lower left of the Imager / Film Imaging Camera.

4-3. Release left door (push button on bottom front of left door) to gain access into the imager. Ensure that no film is in transport. Secure internal components in accordance with manufacturer's directions.

4-4. Block and brace the shock mounted imaging camera. The brace is a block of approximately 2” x 2” by 14” long wood that mounts on the left front vertical rail. The camera should be mounted firmly to the chassis to prevent motion of the assembly.

4-5. Place a 14” wide sheet of paper around the top of the thermal drum and manually slide the paper or rotate the drum to ensure that the paper rests below the drum. This is done to prevent adhesions of the rubber on the drum to other parts of the imager.

4-6. Secure the top mechanism to the chassis (large screw on top right side, under the plastic cover.

4-7. Locate and secure the elastic Bungee cord over the top of the camera. This cord reaches from the back platform to the keyhole slot in the front side of the platform.

4-8. Stow Data Cables neatly on folding wall behind Console.

4-9. Remove floor attachment bolts from the camera stowage location (along the left side of the Control Console). A wrench (9/16-inch) is in the toolbox.

4-10. Raise camera off floor (use jackscrews in platform). Move Camera to stowage location bolt-down holes alongside the Console. Face front of camera towards personnel door.

4-11. Thread Floor Attachment Bolts into floor bolt-down holes. Use care NOT to strip the threads.

4-12. After all bolts are installed, lower camera to the floor (turn handles counter clockwise) and continue until the wheels are <u>off the floor</u>.

CAUTION! MECHANICAL DAMAGE HAZARD
THE CAMERA RESTS ON A SHOCK-ABSORBING MECHANISM THAT ALLOWS CONTROLLED VERTICAL MOTION DURING TRANSPORT. FAILURE TO FULLY RAISE THE CAMERA WHEELS CAN RESULT IN MECHANICAL DAMAGE TO THE LASER IMAGER.

4-13. Tighten the Floor Attachment Bolts and return the wrench to the toolbox.

5. Disconnect Patient Support.

5-1. The Patient Support should already be at its lowest position. If it is not, you must get electrical power to the CT and ensure that the patient support is lowered.

5-2. Disconnect electrical power before continuing with the next step.
5-3. Align the Patient Support Couch Top two (2) inches back from the front edge of the front of the Patient Support.
5-4. Engage the couch top lock on the right side of the Patient Support. Ensure the lock is engaged with the detent in the patient support by attempting to move the couch top slightly back-and-forth.
5-5. If not already done, fasten the phantom and case to the head end of the Patient Support.
5-6. If the CT scanner is to be stored for an extended period at low temperature, remove and dispose of the water from the phantom.
5-7. From each corner of the base of the Patient Support, remove the T-handle hold-down bolt and place on the tabletop.
5-8. Mechanically disconnect the Patient Support from the Gantry.
5-9. Raise the floor-level cover (stainless steel footswitch cover) at the front of the Patient Support.
5-10. Disconnect the three connectors. Disconnect the double ground wires by unscrewing the wing nut on the ground stud. Remove the ground wires and return the wing nut to the ground stud.
5-11. Replace the footswitch cover. Carefully place the cables into the foot switch trough.
5-12. Raise the Patient support

CAUTION! PROPER LIFTING OF THE PATIENT SUPPORT TO THE TRANSPORT MODE REQUIRES SYNCHRONOUS ROTATION OF JACK HANDLES. MAINTAIN JACK HANDLE ROTATION WITHIN ONE TURN OF EACH OTHER.

5-13. Raise the Patient Support by turning the jack handles clockwise (CW). The handles should be maintained within one turn of each other to reduce strain on the Patient Support and on the jacks.
5-14. Relocate the Patient Support away from the Gantry.

STOP! PREPARE THE GANTRY FOR TRANSPORT. Movement around the Gantry requires room and the Patient Support can not be in its stowed location for this process. After the Gantry is secured for transport, you will complete the stowage process for the Patient Support.

6. Secure Gantry for transport

CAUTION! THE GANTRY MUST BE POSITIONED AT 0^{o} (O DEGREES) <u>BEFORE</u> SETTING THE TILT LOCK. THIS REQUIRES SYSTEM POWER AND SHOULD ALREADY BE DONE.

6-1. Set the Tilt Lock at the rear of the Gantry. Move the handle from the left, horizontal position to the right, almost vertical position. Move the handle until it "drops" into the detent and the Gantry locks.
6-2. Secure the Tilt lock arm with the strap attached to the rear of the gantry (to prevent it from accidentally moving to the left during transport).

6-3. Raise and secure the two Transport Pins on the top of the Gantry. The Transport Pins are held in place by a safety pin. A strong pull will remove the safety pin from the Transport pin.
6-4. Note that the Transport pins on the top of the gantry will just enter the ceiling guides. As the gantry is raised later, each pin will enter the ceiling guide and secure the gantry. Replace the Safety Pin into the Transport Pin with one hand while the Transport Pin is held in position with the other.
6-5. Remove the access covers from each side of the Gantry. Release the two rubber clamps, and then swing the front of the cover around an imaginary "pivot point" at the rear of the cover. Set the covers aside.
6-6. Raise the Alignment pins at the bottom rear of the Gantry. Remove the Locking pin by pressing on the button at the head of the pin and then pull the Locking pin out of the Alignment pin. Raise the Alignment pin and reinsert the Locking pin.

NOTE: THE TWO GANTRY LOCATING PINS AT THE BOTTOM REAR OF THE GANTRY MUST BE RAISED DURING ISO-SHELTER TRANSPORT. FAILURE TO COMPLY WILL RESULT IN MECHANICAL DAMAGE TO THE PINS AND CAN AFFECT SCANNER PERFORMANCE.

6-7. Remove the Patient Support Transport blocks from the each side of the gantry and place on the Patient Support. A label identifies their individual stowage location.
6-8. Raise the Gantry for transport.

NOTE: Early versions of the gantry support mechanism rely on the use of a 9/16” hex head socket welded to the jackscrew and external socket wrench. For those systems: Locate the appropriate socket and ½” drive ratchet wrench for each jackscrew. For later versions, the wrench is attached to the jackscrew. The instructions that follow apply to either system.

NOTE: Work on two of the screws on one end of the gantry at one time.

6-9. Rotate the jack handles CW until each jack has pressure on it. Then raise the Gantry by rotating the four- (4) large handles (two at a time).
6-10. The jacks at each end of the Gantry must be within 1 turn of each other or mechanical binding will occur within the jackscrew assembly which can cause equipment damage.
6-11. Continue until the Gantry is completely off the floor and the jacks are at the top of the screw mechanisms. If necessary, turn the handles CCW (this should not be more than a half-turn) so that they can be folded to the inside.

NOTE: While raising Gantry observe that the Transport pins on the top of the Gantry are engaging the ceiling cups. If not, align Gantry transport pins using jackscrews or by physically jogging the gantry into position.

6-12. Reinstall the Jack Access covers. Ensure that both rubber clamps are in place

RETURN TO THE PATIENT SUPPORT AND COMPLETE THE STOWING PROCESS.

6-12. Stow Patient Support.

6-12-1. Remove the previously applied duct tape from each of the stowage holes. Use additional duct tape to cover the now exposed floor holes used while the patient transport was in the “Use Mode.”

6-12-2. Move the Patient Support to the stowage position between the Gantry and the operator console. Locate the head end of the patient support (with the Phantom and case) towards the fixed wall. A floor bolt-down location will be under each of the Patient Support mounting plate holes.

6-12-3. Slide one Transport Block under each end of the Patient Support. Align the holes in the ends of the blocks with the bolt-down holes in the floor of the ISO-shelter. Then, align the Patient Support over the holes in each Transport Block.

NOTE: It may be necessary to lift the Patient Support slightly to place the transport blocks under the coil spring shock isolators.

CAUTION! LIFTING HAZARD
THE PATIENT SUPPORT SHIPPING WEIGHT IS 600 LBS. (273 kg,). LIFT ONLY ONE END AT A TIME.

6-12-4. Insert a T-handle bolt into each corner bolt-down location. The T-handle bolt must go through the table bracket and the transport block bolt hole.

6-12-5. When all four T-handle bolts are installed, lower the Patient Support onto the transport blocks by turning the jack handles counter-clockwise (CCW).

6-12-6. Continue turning the Patient Support jack handles fully CCW and raise the wheels off the floor.

6-12-7. Tighten the 4 T-handle bolts.

CAUTION! POSSIBILITY OF MECHANICAL DAMAGE
THE PATIENT SUPPORT RESTS ON A SHOCK-ABSORBING MECHANISM THAT ALLOWS VERTICAL MOVEMENT DURING TRANSPORT. FAILURE TO FULLY RAISE THE PATIENT SUPPORT WHEELS CAN RESULT IN MECHANICAL DAMAGE.

6-13. Stow ISO-shelter Components

6-13-1. Stow Operator's chairs. Place chairs (there are two ergonomic chairs supplied with the system) in upside down position on top of step-up transformer (behind Gantry). Secure to that location with supplied straps.

6-13-2. As expandable wall is closed, remove scissors jack from under beam and replace it into toolbox.

6-13-3. Perform "Stowage Checklist"

STOWAGE CHECKLIST

Console Area:
- Monitor, Keyboard and Chair Secured.
- Camera Secured to floor -- wheels raised fully.
- Operator Shield Secured.

Patient Support:
- Transport blocks under Patient Support, wheels raised fully.
- Patient Support Secured to floor
- Phantom Secured to top
- Phantom drained for cold climate
- Couch Top Locked (right side)

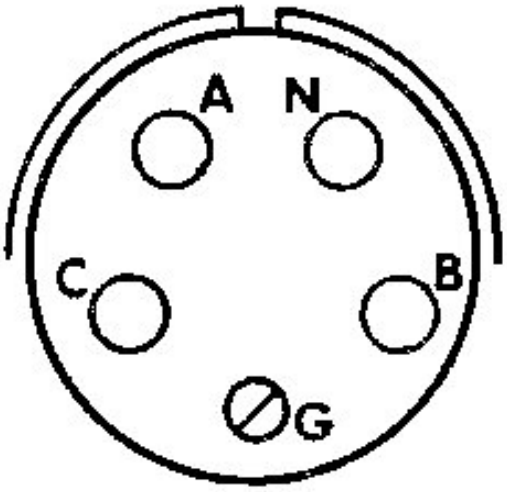
Gantry:
- Fully raised off floor
- Lock engaged (Rear)
- Alignment pins raised (Rear, bottom)
- Transport pins raised and in ceiling guides (top).

Auxiliary Equipment:
- Camera Power Receptacle Stowed
- Entrance curtain and rail stowed
- Scissors jack removed from beneath ISO-shelter and stowed

ISO shelter interior area:
- 120 VAC receptacles relocated to stowage positions
- Film viewers (if used) removed from walls or otherwise stowed
- Telephone connections disconnected from interior
- No loose equipment.
- Floor swept on both sides
- No loose or unexplained power cords or other electrical connections
- Plastic plugs replaced in exterior surfaces where sink drain was located
- Plastic plug in port where fiberoptic cable was located
- Plug Bolts or duct tape installed in floor holes in front of Gantry.
- Relocate dehumidifier to MILVAN. Ensure that it is blocked and braced to prevent damage to the fan.

Standardized Generator Wiring &Connections

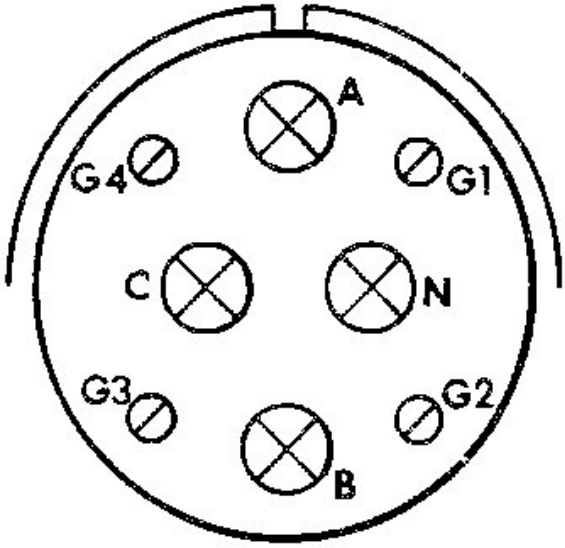
Generator Terminal Marking	Type of Current	Contact Designation	Conductor Circuit	Wire Color
+ (POS) - (NEG) ground	28 VDC 28 VDC	A N	Positive Negative	Black White
L_1 **L_2** **L_3**	VAC VAC VAC	**A** **B** **C**	**Phase A** **Phase B** **Phase C**	**Black** **Red** **Blue (Commercial may be Orange)**
L_0 **G**	VAC	**N** **G**	**Neutral** **Safety Grounding**	**White** **Green (Commercial may be bare)**



60 Ampere Connector

Type 32-13-CO-04 HDF
3Ø AC
4 Wire Grounding
Cable:
Four #4 AWG, Four #12 AWG

Position	Size	Pin M39029/48	Socket M39029/49
A, B, C	4	-320	-331
N	4N	-321	-331
G	6N	-318	-329



100 Ampere Connector

Type 44-13-CO-04
3Ø AC
4 Wire Grounding
Cable:
Four #1 AWG, Four # 8 AWG

Position	Size	Pin M39029/48	Socket M39029/49
A, B, C	1/0-1	-323	-333
N	1/ON-1	-324	-333
G1,G2, G3,G4	6G	-319	-330

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